

I CLAIM:

1. A nuclear magnetic resonance (NMR) spectrometer for investigating a liquid sample in a sample tube, the spectrometer comprising:
 - a sample bushing surrounding the sample tube, said sample bushing having a bore into which one end of the sample tube is inserted with close tolerance, said sample bushing being substantially cylindrical with said bore extending along a cylinder axis thereof, said sample bushing having at least one groove fashioned within an outer periphery of said sample bushing; and
 - a gripping device for cooperation with said sample bushing, said gripping device having at least three gripping fingers structured to engage said groove of said sample bushing to press onto two outer edges of said groove in a closed configuration of said gripping device.
2. The NMR spectrometer of claim 1, wherein said gripping device comprises four gripping fingers.
3. The NMR spectrometer of claim 1, wherein each of said gripping fingers has a conical or rounded projection which is oriented radially inwardly towards said cylinder axis of said sample bushing for abutment on said two outer edges of said groove.
4. The NMR spectrometer of claim 1, further comprising an expanding cone disposed inside said gripping device for upward and downward motion therein, said cone having a conical surface at a lower end thereof for spreading said gripping fingers.

5. The NMR spectrometer of claim 1, wherein said sample bushing defines a press fit into which the sample glass can be inserted in a gas-tight manner.
6. The NMR spectrometer of claim 1, wherein said sample bushing has a conical bore for introducing an injection needle of a filling device.
7. The NMR spectrometer of claim 1, further comprising a closing ball for sealing said sample bushing in a liquid or gas-tight fashion.
8. The NMR spectrometer of claim 1, wherein an outer diameter of the sample tube is less than 2mm.
9. The NMR spectrometer of claim 8, wherein an outer diameter of the sample tube is less than 1mm.
10. The NMR spectrometer of claim 1, wherein said sample bushing has a coding.
11. The NMR spectrometer of claim 10, wherein said coding is a data matrix with data for identification of the sample.
12. The NMR spectrometer of claim 1, wherein said sample bushing has an alphanumerical marking which can be visually read to determine a position where the sample glass is to be processed.
13. The NMR spectrometer of claim 12, further comprising a container within which the sample is positioned using said marking.

14. The NMR spectrometer of claim 1, wherein said at least one groove has a polygonal, rectangular or triangular cross-section.
15. The NMR spectrometer of claim 1, wherein said at least one groove is formed as a continuous centering groove which extends around an entire periphery of said sample bushing.
16. The NMR spectrometer of claim 1, wherein said sample bushing has several grooves.
17. The NMR spectrometer of claim 16, wherein said several grooves extend around an entire periphery of said sample bushing.
18. The NMR spectrometer of claim 1, wherein said sample bushing has an outer diameter of 10mm or less.
19. The NMR spectrometer of claim 18, wherein said outer diameter is 3 to 8mm.
20. The sample bushing of the NMR spectrometer of claim 1, wherein said groove is formed on an outer periphery of said sample bushing such that said gripping fingers of said gripping device can engage at at least three locations distributed radially around said periphery of the sample bushing for handling said sample bushing while pressing onto said two outer edges of said groove when said gripping device is closed.